

dry woods, from Michigan to Long Island, and Pennsylvania to North Carolina.

Easily distinguished from *E. Pennsylvanica* by the slender culms and panicles, the very short cauline leaves, the longer and wider lower glume, the more obtuse and shorter upper glume, and the shorter obtuser flowering glumes.

2. *EATONIA FILIFORMIS*—*E. Pennsylvanica*, var. *filiformis* Chapman. Very well characterized by Dr. Chapman in the Flora of the Southern States. It is easily distinguished by the very long filiform leaves, slender culm and panicle, short obtuse flowers, and very obtuse smoothish upper glume. Florida to Texas.

There are several varieties of *E. Pennsylvanica* and of *E. obtusata*, and in Louisiana there is a peculiar form with often 3-flowered spikelets, the flowering glumes acuminate and sometimes mucronate.—GEO. VASEY.

On the characters of species in Cacti.—Just what are good characters or not for distinguishing species of Cactaceæ is worthy of study. As the species are so difficult to determine in herbaria, I try to get living specimens and watch their growth. Some two years ago I had sent to me by a stranger in Texas a plant which he called *Mammillaria applanata*, with a hint that if I sent money and trusted to him, he would send living plants of the cacti of that region to the value thereof. I sent five dollars, but have never had cactuses, or answers to letters since. Though my plant, therefore, cost me five dollars, it seemed to agree pretty well with Engelmann's description in *Pl. Lindheimeriana*, of *M. applanata*. Haage & Schmidt of Erfurt, in the midst of men who know cacti, sent me another as *M. applanata*. Dr. Engelmann, in *Botany of Mexican Boundary*, speaks of his *M. applanata* and *M. hemisphærica* as being after all but "different forms" of *M. Heyderi*, Muhlenpf. Now *M. applanata*, as described by Engelmann, is "depressed," with yellowish lobes to the stigma, and yellowish stamens. *M. hemisphærica* is "hemispherical," with yellowish-red stigma-lobes, and reddish stamens. Now this last suits my German specimen, and it should be that "form," but Engelmann says it has much fewer and shorter spines than the "form" *applanata*; but this has just as many and just as long, but they are so slender that they might be termed cilia, and they are slightly recurved. The other, which being depressed might be *applanata*, has stiff and rather lighter spines. The plant is about three inches high by four wide; the hemispherical one about four by six. The tubercles in the depressed one are so close together that we can note no fleecy wool in the axils, while in the other they are all distinct, and the little mass of wool is plainly seen. In the depressed form the flowers are so comparatively short that they can not expand fully, through the interference of the spines; in the other they are longer, so long that the petals spread over the bundles of spines, and when in full sunlight give the plant quite a gay appearance. So far as we usually judge of species among cacti, we have characters for two good species. Outside of this are characters not mentioned by Englemann. Supposing the depressed one to be *M. applanata*, the lobes of the stigma are green, not yellow, and about two lines long. The lobes of *M. hemisphærica* (?) are four lines long.

But there is a something almost indescribable by which the student of cacti can class the "forms," and as these are now blooming before me to-day in my

greenhouse (March 6th) he would say "these are all one." The florist would want to keep them separate, and give them separate names, for the rounder one is by far the most showy. The forms of the same species open their flowers almost simultaneously. Flowers on different plants will open on almost the same day of the month. Then again the numerical order in which they appear in the axils of the tubercles is a good specific point. Counting from the uppermost tubercle on which the bundle of spines seems fully formed, and following the spiral down, the flowers will sometimes come from the axil of the second, or of the third, the fourth, or the fifth. Sometimes there will be two circles of flowers. In this Heyderi and "forms" there are three circles, from the second, third, and fourth.

The point I desire to make in this note is that cacti are not only hard to determine, but harder than we have been led to believe them; that in all probability characters that we have depended on as distinguishing, are of less value than has been assumed; and that those who find new "forms" should hesitate considerably before loading science with a heavy burden of synonyms. There was one special lesson of interest from the study of these two forms of *Mammillaria*. Everyone knows that the fronds or joints in *Opuntia* are not always of uniform shape on the same plant. One generally with an almost orbicular section will sometimes have sections much elongated. I have noted on *Opuntia Rafinesquii*, that when the frond is elongated, the ovarium is elongated and the petals are more slender. Elongation goes through the whole morphological course. This experience is repeated here; the more elongated plant has longer and more slender sepals and petals, and longer and more slender stigma-lobes.

THOMAS MEEHAN.

EDITORIAL.

IT IS TIME for botanists to be looking forward to their meeting at Buffalo next August. Those who were present at Ann Arbor can bear testimony that they spent a delightful time together, that they were stimulated in their work, and that the year that has elapsed since has felt the constant influence. The personal friendships formed at such a time are not only pleasant to remember, but exceedingly profitable. As Buffalo is more centrally located, and as there are many botanical reminiscences connected with it, we expect even a larger attendance than at Ann Arbor. The Botanical Club has grown into a very vigorous life, not so much on account of its organization, for it has none, but on account of its informality, the strong bond holding it well together being a community of sentiment. As many botanists will come to Buffalo with the warm feelings aroused by the companionship of the last few years, and as there is an active local botanical society, we may all expect a week of great enjoyment and profit. Arrangements will be made for meetings and excursions, and abundant opportunity given for talks in the herbarium and in the field. We bespeak thus early a large attendance, that plans for the summer may be made to include a week at Buffalo, beginning August 18. One feature of the Club meetings can be spoken of now. The JUNE GAZETTE will be an herbarium